

CLAIMS

What is claimed is:

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1. A graft compatible with living tissue, said graft comprising an elongated tube woven from a plurality of warp yarns oriented in a warp direction substantially lengthwise along said tube and a plurality of fill yarns oriented in a fill direction substantially circumferentially around said tube, said warp and said fill yarns being elastic, at least some of said yarns being woven under relatively less tension than other of said yarns thereby forming a region of said tube having relatively greater flexibility than the remainder of said tube.

2. A graft according to Claim 1, wherein said yarns woven under relatively less tension comprise warp yarns, said region of relatively greater flexibility being oriented in said warp direction thereby allowing said tube to stretch lengthwise.

3. A graft according to Claim 2, wherein said region of relatively greater flexibility is positioned over a portion of said tube between ends of said tube.

4. A graft according to Claim 1, wherein said yarns woven under relatively less tension comprise fill yarns, said region of relatively greater flexibility being oriented in said fill direction thereby allowing said tube to stretch radially outwardly.

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5. A graft according to Claim 4, wherein said region of relatively greater flexibility is positioned over a portion of said tube at one end thereof.

6. A graft compatible with living tissue, said graft comprising an elongated tube woven from a plurality of warp yarns oriented in a warp direction substantially lengthwise along said tube and a plurality of fill yarns oriented in a fill direction substantially circumferentially around said tube, said warp and said fill yarns being elastic, said tube comprising a region of relatively greater flexibility oriented in one of said warp and said fill directions, said region of relatively greater flexibility being formable oriented in said warp direction by weaving said warp yarns comprising said region under relatively less tension than the tension at which said warp yarns comprising the remainder of said tube are woven, said region of relatively greater flexibility being formable oriented in said fill direction by weaving said fill yarns comprising said region under relatively less tension than the tension at which said fill yarns comprising the remainder of said tube are woven.

7. A graft according to Claim 6, wherein said region of relatively greater flexibility is further formable in said warp direction by including in said region relatively fewer of said warp yarns per unit length than the number of said warp yarns per unit length comprising the remainder of said tube, said region of relatively greater flexibility being further formable in said fill direction by including in said region relatively fewer of said fill yarns per unit

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length than the number of said fill yarns per unit length comprising the remainder of said tube.

8. A graft according to Claim 6, wherein said region of relatively greater flexibility is oriented in said fill direction and located at one end of said tube, said region of relatively greater flexibility being formed by weaving said plurality of said fill yarns comprising said region under relatively less tension than the tension at which said fill yarns comprising the remainder of said tube are woven.

9. A graft according to Claim 8, further comprising a second region of relatively greater flexibility oriented in said fill direction and located at an opposite end of said tube, said second region of relatively greater flexibility being formed by weaving said plurality of said fill yarns comprising said second region under relatively less tension than the tension at which said fill yarns comprising a portion of said tube between said first named and said second regions are woven.

10. A graft according to Claim 9, further comprising a third region of relatively greater flexibility oriented in said warp direction and located between said first named and said second regions of relatively greater flexibility, said third region of relatively greater flexibility being formed by weaving said plurality of said warp yarns comprising said third region under relatively less tension than the tension at which said warp yarns comprising said first named and said second regions of relatively greater flexibility are woven.

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11. A graft according to Claim 10, wherein said tube comprises a bifurcated tube.

12. A graft according to Claim 6, wherein at least one of said plurality of said warp yarns and said fill yarns comprises yarns selected from among the group consisting of highly textured polyester, polypropylene and polytetrafluoroethylene yarns.

13. A graft according to Claim 6, wherein at least one of said plurality of said warp yarns and said fill yarns comprises yarns selected from among the group consisting of silicone, polyurethane and rubber yarns.

14. A graft compatible with living tissue, said graft comprising an elongated bifurcated tube comprising a main tube connected with two branch tubes in fluid communication with said main tube, said bifurcated tube terminating in a first end positioned distally from said branch tubes, each of said branch tubes terminating in an end distally from said main tube, said bifurcated tube being woven from a plurality of warp yarns oriented in a warp direction substantially lengthwise along said main and said branch tubes and a plurality of fill yarns oriented in a fill direction substantially circumferentially around said main and said branch tubes, said warp and said fill yarns being elastic, said ends having relatively greater flexibility in said fill direction than said main and said branch tubes between said ends, said ends being formed by weaving said plurality of said fill yarns comprising said ends under relatively less tension than the tension at which said plurality of

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said fill yarns comprising said main and said branch tubes between said ends are woven.

15. A graft according to Claim 14, wherein said main and said branch tubes between said ends have relatively greater flexibility in said warp direction than said ends, said main and said branch tubes between said ends being formed by weaving said plurality of said warp yarns comprising said main and said branch tubes under relatively less tension than the tension at which said plurality of said warp yarns comprising said ends are woven.

16. A graft compatible with living tissue, said graft comprising an elongated tube woven from a plurality of warp yarns oriented in a warp direction substantially lengthwise along said tube and a plurality of fill yarns oriented in a fill direction substantially circumferentially around said tube, said warp and said fill yarns being elastic, said tube comprising a region of relatively greater flexibility in one of said warp and said fill directions, said region of relatively greater flexibility being formable in said warp direction by including in said region relatively fewer of said warp yarns per unit length than the number of said warp yarns per unit length comprising the remainder of said tube, said region of relatively greater flexibility being formable in said fill direction by including in said region relatively fewer of said fill yarns per unit length than the number of said fill yarns per unit length comprising the remainder of said tube.

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17. A graft according to Claim 16, wherein said region of relatively greater flexibility is oriented in said fill direction and located at one end of said tube, said region of relatively greater flexibility being formed by including in said region relatively fewer of said fill yarns per unit length than the number of said fill yarns per unit length comprising the remainder of said tube.

18. A graft according to Claim 17, further comprising a second region of relatively greater flexibility oriented in said fill direction and located at an opposite end of said tube, said second region of relatively greater flexibility being formed by including in said second region relatively fewer of said fill yarns per unit length than the number of said fill yarns per unit length comprising a portion of said tube between said first named and said second regions of relatively greater flexibility.

19. A graft according to Claim 18, further comprising a third region of relatively greater flexibility oriented in said warp direction and located between said first named and said second regions of relatively greater flexibility, said third region of relatively greater flexibility being formed by including in said third region relatively fewer of said warp yarns per unit length than the number of said warp yarns per unit length comprising said first named and said second regions of relatively greater flexibility.

20. A method of making a graft comprising an elongated tube compatible with living tissue and having

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a region of relatively greater flexibility, said method comprising the steps of:

weaving a plurality of elastic warp yarns oriented in a warp direction substantially lengthwise along said tube at a first predetermined tension with a plurality of elastic fill yarns oriented in a fill direction substantially circumferentially around said tube at a second predetermined tension; and

weaving at least some of said yarns at a third predetermined tension relatively less than said first and said second tensions thereby forming said region of relatively greater flexibility, said flexibility being greater in said warp direction when said plurality of said warp yarns are woven at said third predetermined tension, said flexibility being greater in said fill direction when said fill yarns are woven at said third predetermined tension.

21. A method according to Claim 20, wherein said plurality of fill yarns are woven at said third tension over a portion of said tube positioned at one end thereof, thereby forming said region of relatively greater flexibility at said one end, said increased flexibility being in said fill direction.

22. A method according to Claim 21, wherein said plurality of fill yarns are woven at said third tension over a second portion of said tube positioned at an opposite end thereof, thereby forming a second of said regions of relatively greater flexibility at said opposite end, said increased flexibility being in said fill direction at said opposite end.

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23. A method according to Claim 22, wherein said plurality of warp yarns are woven at said third tension over a third portion of said tube positioned between said ends, thereby forming a third said region of relatively greater flexibility, said increased flexibility being in said warp direction over said portion between said ends.

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